

New Records of Some Hydromedusae (Cnidaria: Hydrozoa) in Korea

Jung Hee Park*

Department of Life Science, College of Natural Sciences, The University of Suwon,
Gyeonggi-do 445-743, Korea

ABSTRACT

Some hydromedusae were collected from Korean waters with Issacc-Kidd Midwater trawl net or by SCUBA diving during the period from May 2001 to Nov. 2005. They were identified into 14 species of 11 families in six orders. Of these, the following six species are new to Korean fauna: *Olindias formosa* (Goto, 1903) and *Proboscicydactyla stellata* (Forbes, 1846) of the order Limnomedusae; *Aglantha digitale* (Müller, 1776) and *Rhopalonema velatum* Gegenbaur, 1854 of the order Trachymedusae; *Solmundella bitentaculata* (Quoy and Gaimaud, 1833) and *Aegina citrea* Eschscholtz, 1829 of the order Narcomedusae. The order Narcomedusae and the families Rhopalonematidae and Aeginidae are first recorded in Korean waters. As a result of the present study, the Korean hydromedusae consist of 26 species of 19 families in six orders so far.

Key words: taxonomy, hydromedusa, Hydrozoa, Korea

INTRODUCTION

The hydromedusae are a stage of the life cycle in hydroids, and alternate with polyp hydroids except for the orders Trachymedusae and Narcomedusae.

The taxonomic studies of the Korean hydromedusae were done by Park (1996, 2001, 2003), Lee and Park (2001), Park and Song (2004) and Park and Won (2004, 2005). Resulting from these works, 20 species of 17 families in five orders were known in Korean waters so far.

Some hydromedusae were collected from Korean waters with Issacs-Kidd Midwater trawl net or by SCUBA diving during the period from May 2001 to Nov. 2005. They were preserved in about 5% formalin, and were identified on the basis of the taxonomic morphological characters. All pictures in figures were photographed with a camera Nikon FX-35D attached to the stereomicroscope Nikon SMG-U and a camera EOS 300D Digital.

SYSTEMATIC ACCOUNTS

Phylum Cnidaria
Class Hydrozoa
Order Limnomedusae
Family Olinidiidae

***To whom correspondence should be addressed**

Tel: 82-31-220-2480, Fax: 82-31-220-2484
E-mail: jhpark5@suwon.ac.kr

¹*Olindias formosa* (Goto, 1903) (Fig. 1A-F)

Olindioides formosa Goto, 1903, p. 3, pl. 1, figs. 1-9; pl. 2, figs. 14-16; pl. 3, figs. 17-20; Mayer, 1910, p. 358, fig. 203; Kramp, 1961, p. 229.

Olindias formosa: Kramp, 1968, p. 105, fig. 282; Namikawa and Soyama, 2000, p. 59, photographs.

Material examined. Saeseom (Jejudo Is.), 26 Aug. 2005 (S.J. Seo) from 20 m deep by SCUBA diving.

Description. Bell relatively large, hemispherical, reaching about 95 mm wide at widest one, slightly above margin of specimen preserved in formalin. Margin with marginal tentacles. Marginal tentacles (velar tentacles) numerous, arranged two or three rows on margin. Exumbrella tentacles projected outward from exumbrella at any level from very near apex to a short distance above margin, with adhesive pads which pink color in live. As it grew, exumbrella tentacles migrating upward. Manubrium more or less short, four sided prismatic, with four simple, somewhat flaring lobes. Four radial canals from four corners of stomach, but one of these canals bifurcated immediately after leaving stomach. Therefore five radial canals reaching to circular canal at bell margin. Circular canal giving rise to numerous blindly ending centripetal canals, which increasing with age, 13-17 in number per quadrant. Gonads developing on five radial canals, composed of numerous lobes, distributed throughout on radial canals or proximal or distal portion of these, eggs yellow. Radial and circular canals deep scarlet, and centripetal canals lighter of same color.

¹*꽃모자해파리 (신칭)

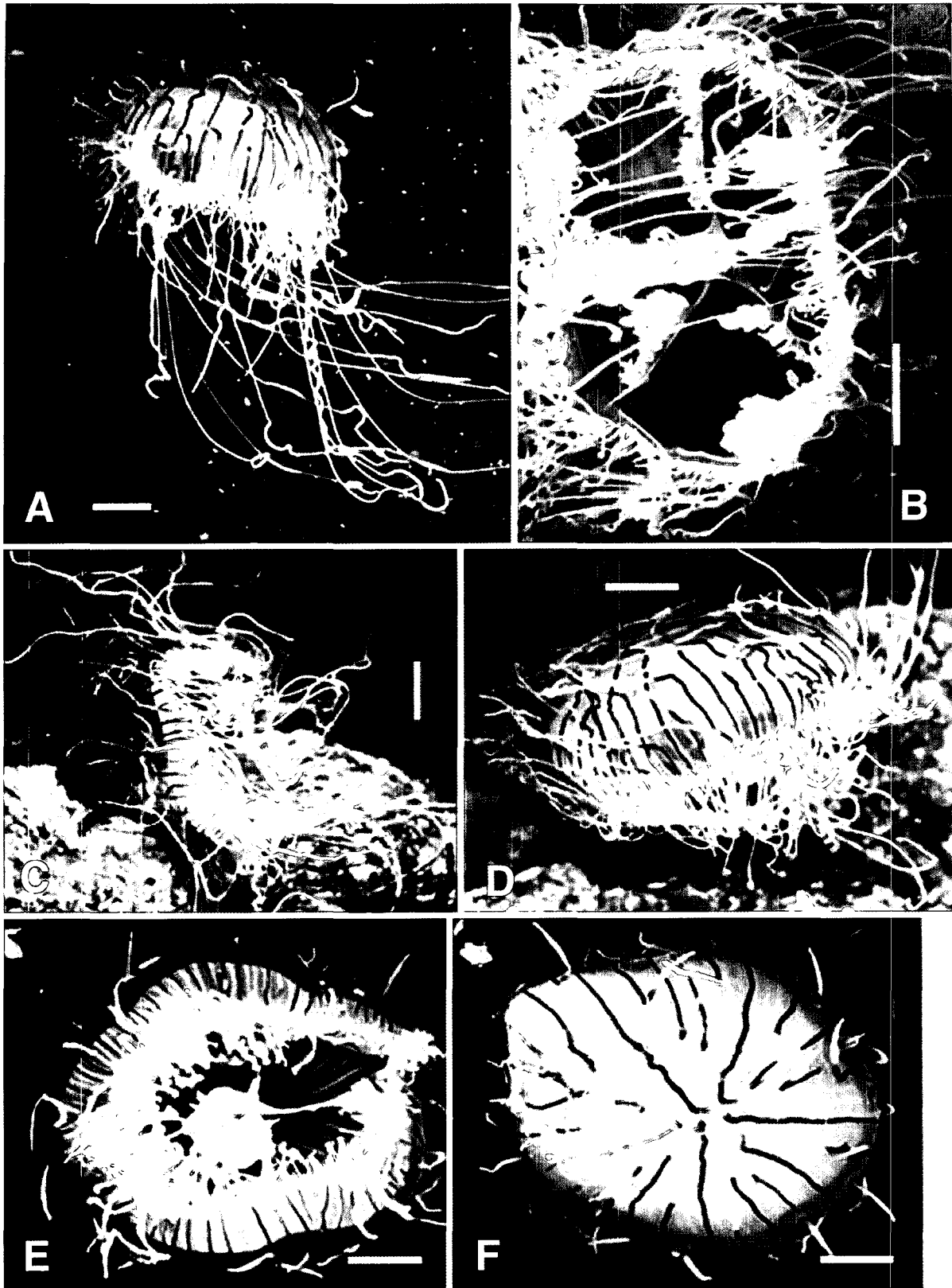


Fig. 1. *Olindias formosa*. A, swimming medusa in live; B, oral view in live; C, turn over in live; D, side view in live; E, oral view; F, aboral view. Scale bars=2 cm (A-F).

Remarks. In the specimen of Mayer (1910), the radial canals are six in number. Two canals of four primary canals are bifurcated immediately after leaving the stomach, but the radial canals in Korean specimens are five in number, because the one of four primary canals is bifurcated. This species appears in 20-30 m deep.

Distribution. Korea, Japan (Tanabe Bay, Amakusa, Sado, Miyaki, Bay of Tokyo).

Family Proboscoidactylidae

¹*Proboscoidactyla stellata* (Forbes, 1846) (Fig. 2A-D)

Willsia stellata: Mayer, 1910, p. 193.

Proboscoidactyla stellata: Chow and Huang, 1958, p. 189, pl. V, fig. 39; Kramp, 1961, p. 236; 1968, p. 109, fig. 294; Pages et al., 1992, p. 37, fig. 41.

Material examined. Namae, 25 Jun. 2002 (J.H. Won).

Description. Bell round, 8-9 mm wide, jelly thick. Stomach

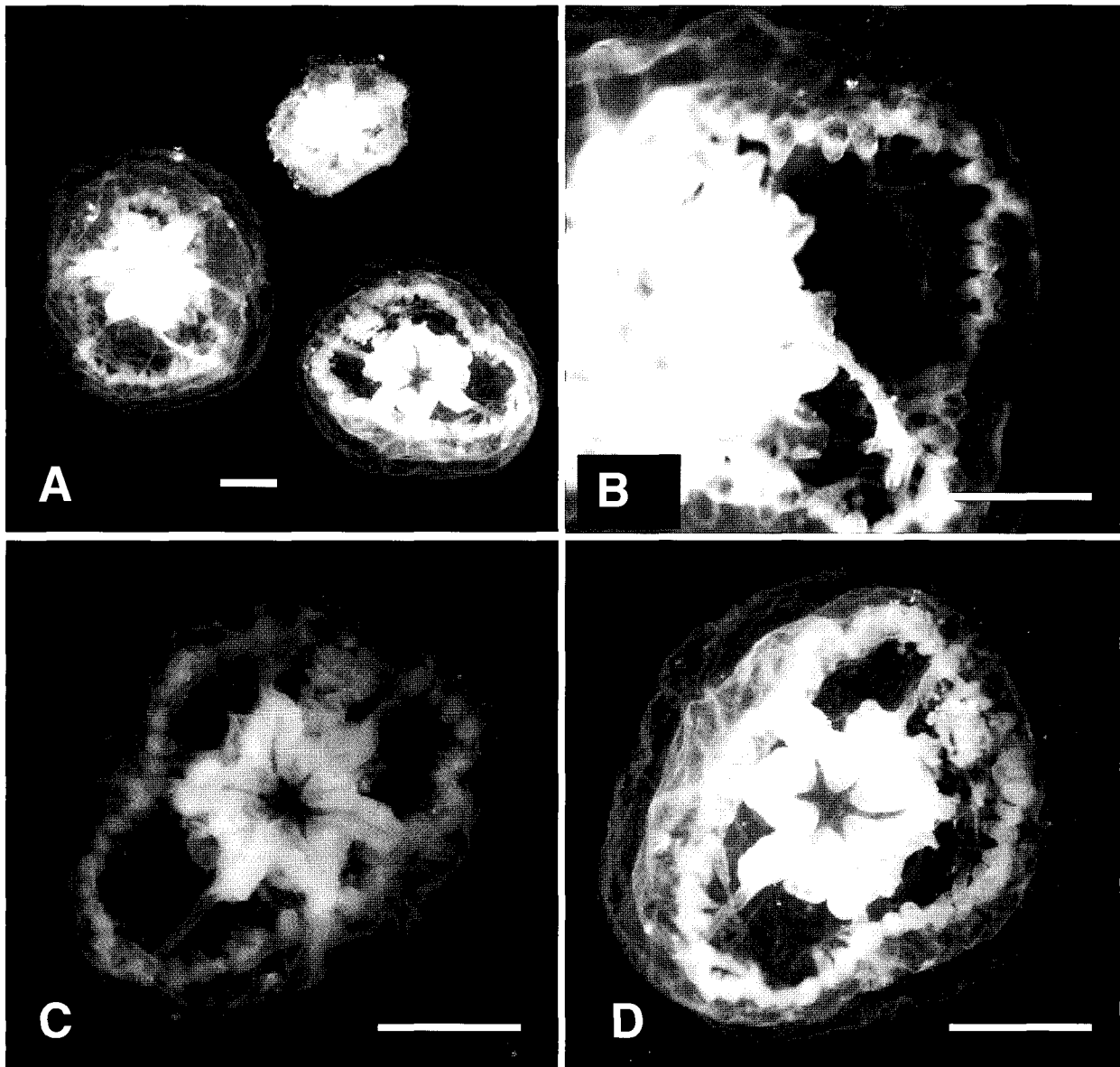


Fig. 2. *Proboscoidactyla stellata*. A, medusae; B, bell margin and folded oral lobes; C, aboral view; D, oral view. Scale bars=0.5 mm (A-D).

¹*별무늬지상해파리 (신칭)

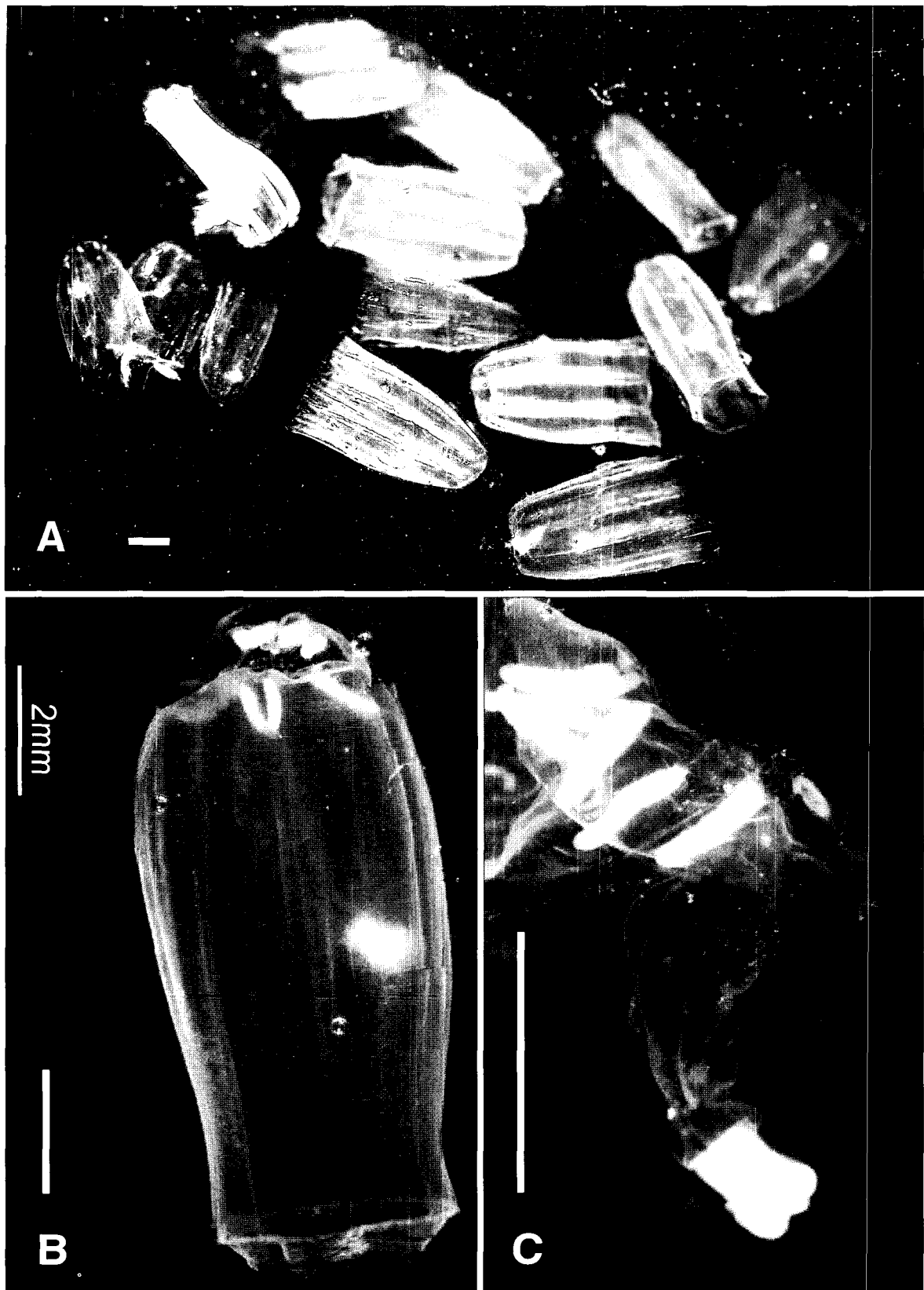


Fig. 3. *Aglantha digitale*. A, medusae; B, enlarged medusa; C, gonads and manubrium. Scale bars=2 mm (A-C).

short, giving rise to six primary radial canals. Mouth with six folded oral lips. Bell margin with marginal tentacles. Gonads on stomach wall, usually extending along radial lobes of stomach.

Remarks. This species is similar to *P. flavicirrata* (see Kramp, 1968; Park and Won, 2004) in the whole shape of medusa, but it is distinguished from *P. flavicirrata* in the number of radial canal. In *P. flavicirrata*, the radial canals are four in number.

Distribution. Japan, Chefoo in China, Vietnam, North-western Europe.

Order ¹*Trachymedusae

Family ²*Rhopalonematidae

³**Aglantha digitale* (Müller, 1776) (Fig. 3A-C)

Aglantha digitale: Hargitt, 1904, p. 55; Uchida, 1933, p. 132, fig. 8; Kramp, 1961, p. 248; 1968, p. 121, fig. 328; Bouillon, 1999, p. 437, fig. 3.170.

Material examined. Donghae, 3 Dec. 2002 (J.H. Won).

Description. Bell thimble-shaped, 7-14 mm long, 3-6 mm wide in margin, with small conical apical projection, sub-umbrella muscle developed well. Manubrium long, slender, mouth with four simple lobes. Marginal tentacles numerous, but fragile and in many cases detached. Velum strong, well developed. Gonads sausage form, developed close to base of peduncle, on eight radial canals.

Remarks. The young medusae of this species are shorter and more spherical. Local varieties differ in size and colour (Kramp, 1968).

Distribution. Northern Pacific, all Arctic and Subarctic waters.

⁴**Rhopalonema velatum* Gegenbaur, 1856 (Fig. 4A-B)

Rhopalonema velatum: Mayer 1910, p. 378, figs. 214, 218, 219; Kramp, 1961, p. 262; 1968, p. 114, fig. 307; Bouillon, 1999, p. 438, fig. 3.186.

Rhopalonema typicum: Hargitt, 1904, p. 54.

Material examined. Yaeyang, 4 May 2001 (J.H. Won).

Description. Bell 5-9 mm wide, somewhat flatter than hemisphere, with conical apical projection. Mouth narrow, with four simple oral lobes and without peduncle. Radial canals eight in number. Margin with eight club-shaped radial tentacles and eight interradial tentacles. Velum very broad. Gonads oval or linear extending along middle 1/3 of radial canals.

Remarks. This species is identical with *R. typicum* which is

larger and about 15 mm wide. The length of the stomach and the position of gonads on the middle of the radial canals are identical with those of *R. typicum* from Woods Hole (Hargitt, 1904). This species is similar to *R. clavigerum* in bell shape, eight radial canals, broad velum, apical projection and size. But *R. velatum* is distinguished from *R. clavigerum* by the position of its gonads. In *R. clavigerum*, its gonads are adjacent to the base of the stomach (Mayer, 1910).

Distribution. Warm and temperate parts of the oceans, Mediterranean.

Order ⁵*Narcomedusae

Family ⁶*Aeginidae

⁷**Solmundella bitentaculata* (Quoy and Gaimard, 1833) (Fig. 5A-C)

Charybdea bitentaculata Quoy and Gaimard, 1833. p. 295, figs. 4, 5.

Solmundella bitentaculata: Mayer, 1910, p. 455, fig. 301; Kramp, 1961, 270; Kramp, 1968, p. 124, fig. 338; Bouillon, 1999, p. 433, fig. 3.146.

Material examined. East Sea, Oct. 2001, 3 Dec. 2002 (J.H. Won).

Description. Bell small, reaching about 6 mm wide and 5 mm high, apical mesoglea thick, bell apex keel-shaped, axis leading to tentacles. Tentacles long, two in number, projecting from sides of bell at a zone nearer to apex. Two deep narrow peradial groove extending upward along side of exumbrella from margin to tentacle, with thick nematocyst strand, continuous with tentacles, while other two furrows 90° away from former, partially closed over, so that peronial strands sunken in mesoglea of bell. About 32 sensory clubs in margin. Velum well developed. Mouth simple, rounded opening, without any organs. Central stomach flat, lenticular, two outpocketings in each quadrant so that eight radial outpocketings. Gonads developed in stomach pouches (Mayer, 1910).

Remarks. This species is similar to *S. mediterranea* (see Mayer, 1910) in having two tentacles, but it is distinguished from *S. mediterranea* by two closed peronial furrows, and its peronial strands are sunken within mesoglea.

Distribution. Pacific northwards to the Sea Okhotsk and southern California, Atlantic everywhere south of 40° N, Mediterranean, circumpolar in antarctic waters, mainly in the upper water layers, particularly common in the southern hemisphere.

¹*경해파리목, ²*곤봉해파리과(신칭), ³*골무해파리(신칭), ⁴*연막곤봉해파리(신칭),

⁵*나르코해파리목(신칭), ⁶*방패해파리과(신칭), ⁷*쌍촉수태양해파리(신칭)

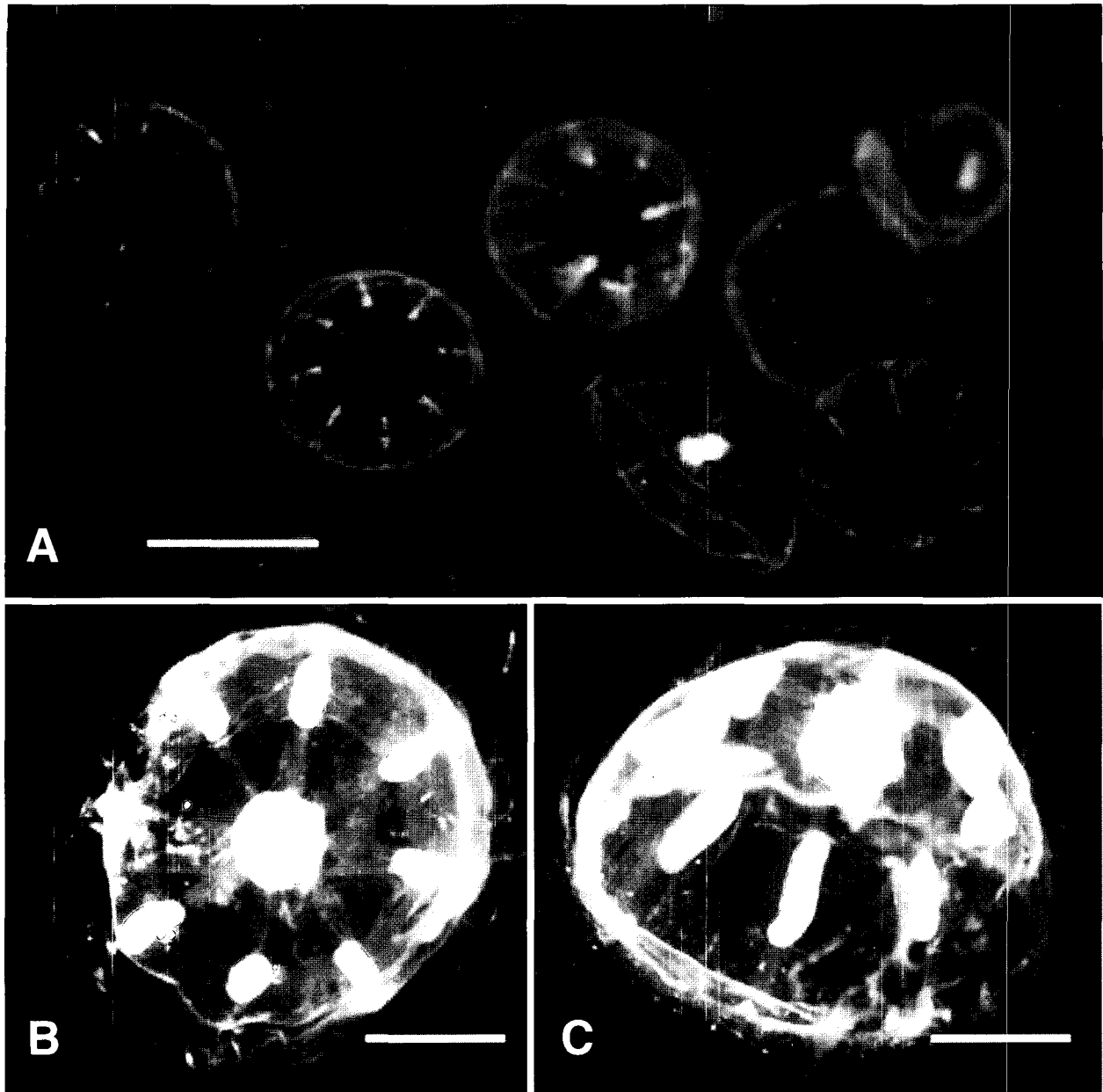


Fig. 4. *Rhopalonema velatum*. A, medusae; B, aboral view; C, sublateral view. Scale bars=10 mm (A), 5 mm (B, C).

¹**Aegina citrea* Eschscholtz, 1829 (Fig. 6A-D)

Aegina citrea: Mayer, 1910, p. 451, figs. 299, 300; Kramp, 1961, p. 266; 1968, p. 123, fig. 334.

Material examined. Munseom (Jejudo Is.), 14 June 2003 (In the Sea Korea).

Distription. Bell hemispherical, about 35 mm wide, 15 mm high, jelly layer thick at apex, but very thin at margin.

Mouth simple, circular, and without any organs. Stomach more or less large, with eight stomach pouches, Tentacles stiff, four in number, projecting from sides at exumbrella in about midway between margin and apex. A peronial strand from each tentacles base to bell margin. Margin divided into four lappets, with numerical marginal statocysts, rhopalia eight in number. Peripheral canal system consisting of four separate loops, extending outward from edge of stomach on

¹*레몬방패해파리 (신칭)

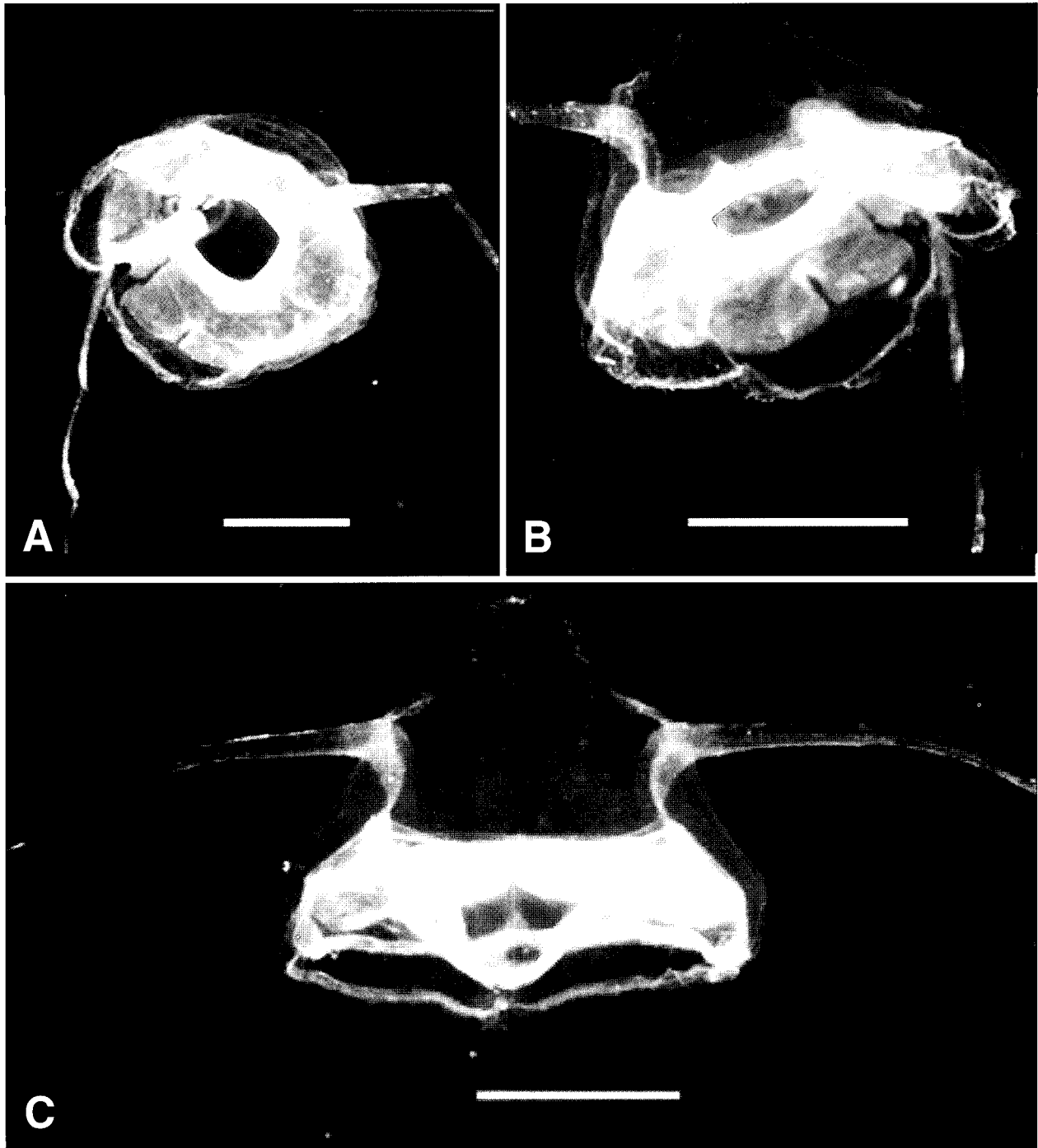


Fig. 5. *Solmundella bitentaculata*. A, aboral view; B, sublateral view; C, lateral view. Scale bars=2 mm (A-C).

one side of a tentacles, and then down on another peronium.
Remarks. This species is similar to *Solmundella bitentaculata* in whole body shape, and eight stomach pouches, but it is easily distinguished from *Solmundella bitentaculata* with two tentacles by four tentacles.

Distribution. Widely distributed in the warm and temperate parts of the oceans in the Pacific as far as the Aleutian Islands and southwards to Chile and southern Australia, in the Atlantic from South Georgia to Iceland, Indian Ocean.

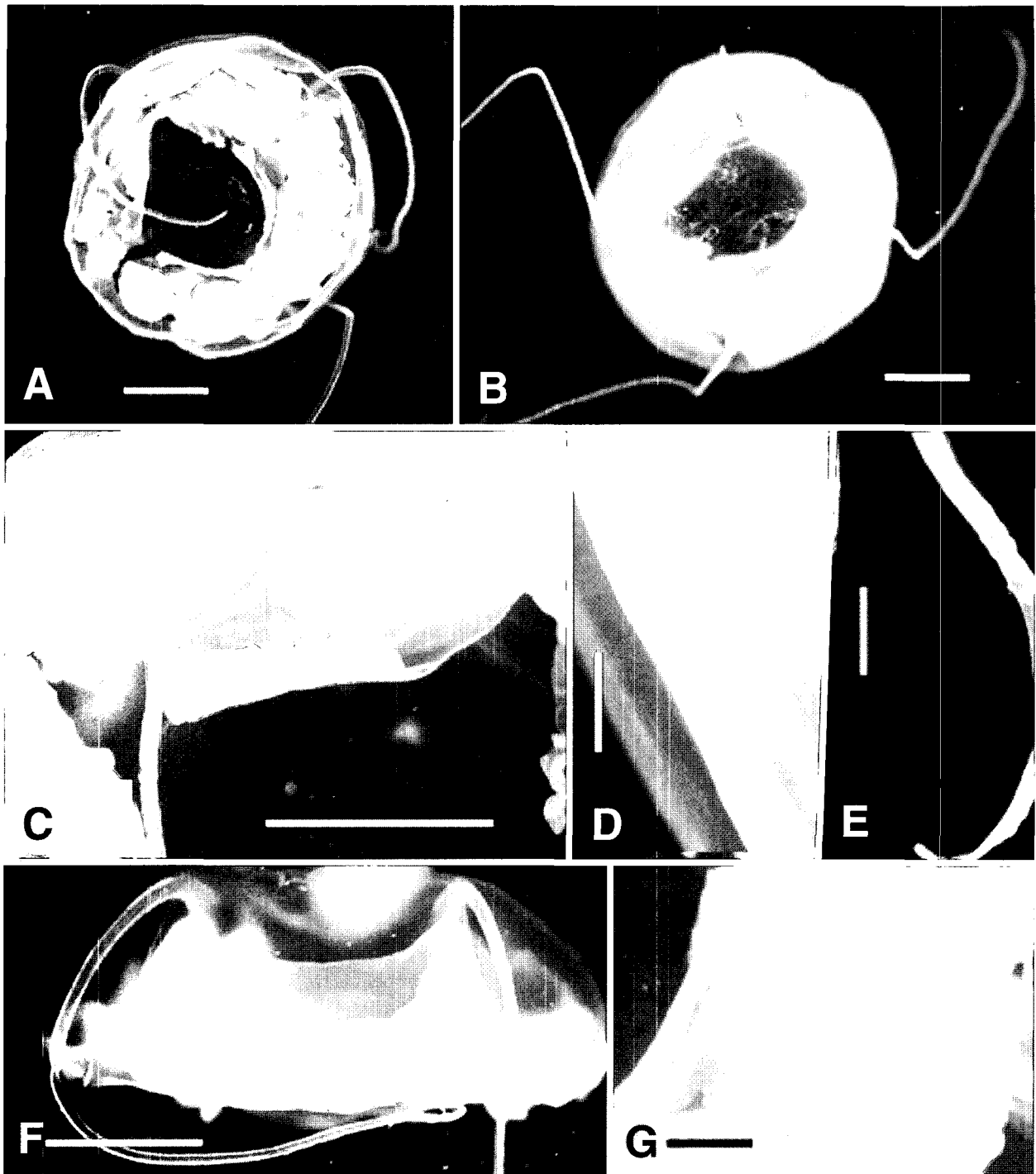


Fig. 6. *Aegina citrea*. A, oral view; B, aboral view; C, oral lobe; D, statocysts; E, tentacle; F, lateral view; G, rhopalium. Scale bars=10 mm (A, B, F), 5 mm (C), 1 mm (D, E, G).

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